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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/810,436 | 03/25/2004 | Min-Chih Hsuan | JCLA12013 | 9790 |
| 7590 J.C. Patents, Inc. Suite 250 4 Venture Irvine, CA 92618 | | 06/26/2007 | EXAMINER ARORA, AJAY | |
| | | | ART UNIT 2811 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/810,436

Applicant(s)

HSUAN ET AL.

Examiner

Ajay K. Arora

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/15/07.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/20/2007 has been entered. An action on the RCE follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US 6,323,550), hereinafter Martin, in view of Meckes (US 7,061,098), hereinafter Meckes.

Regarding claim 1, Martin (refer to Figure 4) discloses a chip package, comprising:

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a chip (10), having an active surface and a plurality of bond pads (16), said bond pads being on said active surface;

a rigid cover (50), on said active surface, said rigid cover exposing said plurality of bond pads (Col. 4, lines 16-21) above said active surface;

an adhesive layer (52), disposed between the chip and the rigid cover, and the rigid cover is adhered to the chip via the adhesive layer; and

a plurality of contacts (18/20) electrically connected to said plurality of bond pads (16), respectively.

Martin does not specifically state that the chip package is "for disposing on a printed circuit board (PCB)" and that chip package contacts are "connected to the PCB".

However, it is well known in the art to connect the contacts of a chip package to a PCB. It would have been obvious to one of ordinary skills in the art at the time of the invention to modify the invention of Martin so that the chip package is "for disposing on a printed circuit board (PCB)" and that chip package contacts are connected to the PCB. The ordinary artisan would have been motivated to modify Martin for at least the purpose of connecting the chip package to other components of a specific circuit that may be mounted on a printed circuit board.

Further, Martin does not teach that the contacts are "conductive bumps". Meckes (refer to Figure 1) teaches a chip package with contacts, wherein the contacts are conductive bumps (14). It would have been obvious to one of ordinary skills in the art at the time of

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the invention to modify the invention of Martin so that the contacts are conductive bumps. The ordinary artisan would have been motivated to modify Martin for at least the purpose of providing an interconnect type that can provide a greater interconnect density (for example, compared to wirebonds of Martin) and more compact overall package.

Regarding claim 3, Martin (refer to Figure 4) teaches that said rigid cover (50) is adhered to said active surface.

Regarding claim 4, Martin (refer to Figure 4) teaches said rigid cover (50) having a periphery adhered to said active surface.

Regarding claim 5, Martin (refer to Figure 4) teaches that the material of said rigid cover (50) includes a conducting material (Col. 4, lines 11-13 and Col. 5, 17-19).

Regarding claim 6, Martin (refer to Figure 4) as modified above for claim 1 teaches substantially the claimed structure including the chip package with said plurality of contacts that are disposed on said plurality of bond pads respectively, but does not teach that "the heights of said contacts relative to said active surface are larger than the height of said rigid cover relative to said active surface". Meckes (refer to Figure 1) teaches a chip package with a cover (9) on said an active surface (5) of the chip and a plurality of bond pads (6) and a plurality of contacts (14) on said plurality of bond pads

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respectively, wherein the heights of said contacts (14) relative to said active surface (5) are larger than the height of said cover (9) relative to said active surface. It would have been obvious to one of ordinary skills in the art at the time of the invention to modify the invention of Martin so that the heights of said contacts relative to said active surface are larger than the height of said rigid cover relative to said active surface. The ordinary artisan would have been motivated to modify Martin for at least the purpose of utilizing flip chip interconnections to connect the chip package to a substrate (e.g. a printed circuit board), wherein the height of the said contacts provides a clearance between the substrate and the chip surface to accommodate typical processing like cleaning after soldering.

Regarding claim 7, Martin (refer to Figure 4) teaches that the plurality of bond pads (16) is disposed on the circumference of said active surface. Note that the claim does not require the said active surface to be circular. Hence, the word "circumference" is being interpreted as the peripheral region of the said active surface.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Meckes, and further in view of Nishiguchi (JP 04024928), hereinafter Nishiguchi.

Regarding claim 8, Martin as modified above teaches substantially the claimed structure but does not specifically state that the active surface area "is a rectangle" and that the said plurality of bond pads are "disposed on one side of said rectangle".

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Nishiguchi teaches a chip with a rectangular active surface area (see English abstract, 1st sentence under the heading "Constituion"). It would have been obvious to one of ordinary skills in the art at the time of the invention to modify the invention of Martin so that the said active surface is a rectangle and that the said plurality of bond pads are disposed on one side of said rectangle. The ordinary artisan would have been motivated to modify Martin for at least the purpose of symmetrical arrangement of bond pads that can improve recognition of features by pattern recognition equipment.

Response to Arguments

Applicant's arguments filed 4/20/2007 with respect to 102(b) rejection of claim 1 (and its dependent claims) have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 4/20/2007 with respect to 35 U.S.C. 103(a) rejections of claims 6 and 8 have been fully considered but they are not persuasive.

On pages 7 and 8, applicant argues regarding claim 6 that "if the external contacts 14 in Meckes are applied to Martin, the ballbonds 16 can not be electrically connected to the leadframe 20". This argument is not persuasive. Martin (refer to Figure 4) teaches that the plurality of bond pads (16) are connected to external contacts (20) of the package by wirebonded interconnects (18). When the interconnect method is modified to use "conductive bumps" instead of wirebonding, 18/20 would be replaced by the "conductive

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bumps (14 of Figure 1 of Meckes). Note that the conductive bumps are connected to bond pads (shown as 16 in Figure 4 of Martin, the corresponding element in Figure 1 of Meckes is labeled 6) and not to "the leadframe" as alleged in applicant's arguments. This in turn means that the chip package can be connected to a PCB through the contacts that are conductive bumps, which addresses the argument presented on page 8 (lines 1-6).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ajay K. Arora whose telephone number is (571) 272-8347. The examiner can normally be reached on Mon through Fri, 8am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sara Crane
Primary Examiner